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SEQUENCE LISTING

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<110> SYKEN, JOSH  
MUNGER, KARL

<120> METHODS AND REAGENTS TO REGULATE APOPTOSIS

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Pro Gly Val Ser Leu Thr Gly Thr Lys His Asn Pro Phe Ile Cys Thr	
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 ggcagcacca tggatagctc cgcaggaagc aaggctaggc gtgaggctgg ggaggacgag 60  
 gagggattcc tttccaaact taagaaaatg tttacctca 99

<210> 7  
 <211> 18  
 <212> DNA  
 <213> Homo sapiens

<400> 7  
 aaaagatcca ctggaaac

18

<210> 8  
 <211> 480  
 <212> PRT  
 <213> Homo sapiens

<400> 8  
 Met Ala Ala Arg Cys Ser Thr Arg Trp Leu Leu Val Val Val Gly Thr  
 1 5 10 15  
 Pro Arg Leu Pro Ala Ile Ser Gly Arg Gly Ala Arg Pro Pro Arg Glu  
 20 25 30  
 Gly Val Val Gly Ala Trp Leu Ser Arg Lys Leu Ser Val Pro Ala Phe  
 35 40 45  
 Ala Ser Ser Leu Thr Ser Cys Gly Pro Arg Ala Leu Leu Thr Leu Arg  
 50 55 60  
 Pro Gly Val Ser Leu Thr Gly Thr Lys His Asn Pro Phe Ile Cys Thr  
 65 70 75 80  
 Ala Ser Phe His Thr Ser Ala Pro Leu Ala Lys Glu Asp Tyr Tyr Gln  
 85 90 95  
 Ile Leu Gly Val Pro Arg Asn Ala Ser Gln Lys Glu Ile Lys Lys Ala  
 100 105 110  
 Tyr Tyr Gln Leu Ala Lys Lys Tyr His Pro Asp Thr Asn Lys Asp Asp  
 115 120 125  
 Pro Lys Ala Lys Glu Lys Phe Ser Gln Leu Ala Glu Ala Tyr Glu Val  
 130 135 140  
 Leu Ser Asp Glu Val Lys Arg Lys Gln Tyr Asp Ala Tyr Gly Ser Ala  
 145 150 155 160

Gly Phe Asp Pro Gly Ala Ser Gly Ser Gln His Ser Tyr Trp Lys Gly  
 165 170 175  
 Gly Pro Thr Val Asp Pro Glu Glu Leu Phe Arg Lys Ile Phe Gly Glu  
 180 185 190  
 Phe Ser Ser Ser Ser Phe Gly Asp Phe Gln Thr Val Phe Asp Gln Pro  
 195 200 205  
 Gln Glu Tyr Phe Met Glu Leu Thr Phe Asn Gln Ala Ala Lys Gly Val  
 210 215 220  
 Asn Lys Glu Phe Thr Val Asn Ile Met Asp Thr Cys Glu Arg Cys Asn  
 225 230 235 240  
 Gly Lys Gly Asn Glu Pro Gly Thr Lys Val Gln His Cys His Tyr Cys  
 245 250 255  
 Gly Gly Ser Gly Met Glu Thr Ile Asn Thr Gly Pro Phe Val Met Arg  
 260 265 270  
 Ser Thr Cys Arg Arg Cys Gly Gly Arg Gly Ser Ile Ile Ile Ser Pro  
 275 280 285  
 Cys Val Val Cys Arg Gly Ala Gly Gln Ala Lys Gln Lys Lys Arg Val  
 290 295 300  
 Met Ile Pro Val Pro Ala Gly Val Glu Asp Gly Gln Thr Val Arg Met  
 305 310 315 320  
 Pro Val Gly Lys Arg Glu Ile Phe Ile Thr Phe Arg Val Gln Lys Ser  
 325 330 335  
 Pro Val Phe Arg Arg Asp Gly Ala Asp Ile His Ser Asp Leu Phe Ile  
 340 345 350  
 Ser Ile Ala Gln Ala Leu Leu Gly Gly Thr Ala Arg Ala Gln Gly Leu  
 355 360 365  
 Tyr Glu Thr Ile Asn Val Thr Ile Pro Pro Gly Thr Gln Thr Asp Gln  
 370 375 380  
 Lys Ile Arg Met Gly Gly Lys Gly Ile Pro Arg Ile Asn Ser Tyr Gly  
 385 390 395 400  
 Tyr Gly Asp His Tyr Ile His Ile Lys Ile Arg Val Pro Lys Arg Leu  
 405 410 415  
 Thr Ser Arg Gln Gln Ser Leu Ile Leu Ser Tyr Ala Glu Asp Glu Thr  
 420 425 430  
 Asp Val Glu Gly Thr Val Asn Gly Val Thr Leu Thr Ser Ser Gly Gly  
 435 440 445  
 Ser Thr Met Asp Ser Ser Ala Gly Ser Lys Ala Arg Arg Glu Ala Gly  
 450 455 460

Glu Asp Glu Glu Gly Phe Leu Ser Lys Leu Lys Lys Met Phe Thr Ser  
 465 470 475 480

<210> 9  
 <211> 453  
 <212> PRT  
 <213> Homo sapiens

<400> 9

Met Ala Ala Arg Cys Ser Thr Arg Trp Leu Leu Val Val Val Gly Thr  
 1 5 10 15

Pro Arg Leu Pro Ala Ile Ser Gly Arg Gly Ala Arg Pro Pro Arg Glu  
 20 25 30

Gly Val Val Gly Ala Trp Leu Ser Arg Lys Leu Ser Val Pro Ala Phe  
 35 40 45

Ala Ser Ser Leu Thr Ser Cys Gly Pro Arg Ala Leu Leu Thr Leu Arg  
 50 55 60

Pro Gly Val Ser Leu Thr Gly Thr Lys His Asn Pro Phe Ile Cys Thr  
 65 70 75 80

Ala Ser Phe His Thr Ser Ala Pro Leu Ala Lys Glu Asp Tyr Tyr Gln  
 85 90 95

Ile Leu Gly Val Pro Arg Asn Ala Ser Gln Lys Glu Ile Lys Lys Ala  
 100 105 110

Tyr Tyr Gln Leu Ala Lys Lys Tyr His Pro Asp Thr Asn Lys Asp Asp  
 115 120 125

Pro Lys Ala Lys Glu Lys Phe Ser Gln Leu Ala Glu Ala Tyr Glu Val  
 130 135 140

Leu Ser Asp Glu Val Lys Arg Lys Gln Tyr Asp Ala Tyr Gly Ser Ala  
 145 150 155 160

Gly Phe Asp Pro Gly Ala Ser Gly Ser Gln His Ser Tyr Trp Lys Gly  
 165 170 175

Gly Pro Thr Val Asp Pro Glu Glu Leu Phe Arg Lys Ile Phe Gly Glu  
 180 185 190

Phe Ser Ser Ser Ser Phe Gly Asp Phe Gln Thr Val Phe Asp Gln Pro  
 195 200 205

Gln Glu Tyr Phe Met Glu Leu Thr Phe Asn Gln Ala Ala Lys Gly Val  
 210 215 220

Asn Lys Glu Phe Thr Val Asn Ile Met Asp Thr Cys Glu Arg Cys Asn  
 225 230 235 240

Gly Lys Gly Asn Glu Pro Gly Thr Lys Val Gln His Cys His Tyr Cys  
 245 250 255

Gly Gly Ser Gly Met Glu Thr Ile Asn Thr Gly Pro Phe Val Met Arg  
260 265 270

Ser Thr Cys Arg Arg Cys Gly Gly Arg Gly Ser Ile Ile Ile Ser Pro  
275 280 285

Cys Val Val Cys Arg Gly Ala Gly Gln Ala Lys Gln Lys Lys Arg Val  
290 295 300

Met Ile Pro Val Pro Ala Gly Val Glu Asp Gly Gln Thr Val Arg Met  
305 310 315 320

Pro Val Gly Lys Arg Glu Ile Phe Ile Thr Phe Arg Val Gln Lys Ser  
325 330 335

Pro Val Phe Arg Arg Asp Gly Ala Asp Ile His Ser Asp Leu Phe Ile  
340 345 350

Ser Ile Ala Gln Ala Leu Leu Gly Gly Thr Ala Arg Ala Gln Gly Leu  
355 360 365

Tyr Glu Thr Ile Asn Val Thr Ile Pro Pro Gly Thr Gln Thr Asp Gln  
370 375 380

Lys Ile Arg Met Gly Gly Lys Gly Ile Pro Arg Ile Asn Ser Tyr Gly  
385 390 395 400

Tyr Gly Asp His Tyr Ile His Ile Lys Ile Arg Val Pro Lys Arg Leu  
405 410 415

Thr Ser Arg Gln Gln Ser Leu Ile Leu Ser Tyr Ala Glu Asp Glu Thr  
420 425 430

Asp Val Glu Gly Thr Val Asn Gly Val Thr Leu Thr Ser Ser Gly Lys  
435 440 445

Arg Ser Thr Gly Asn  
450

<210> 10

<211> 414

<212> PRT

<213> Homo sapiens

<400> 10

Val Ser Leu Thr Gly Thr Lys His Asn Pro Phe Ile Cys Thr Ala Ser  
1 5 10 15

Phe His Thr Ser Ala Pro Leu Ala Lys Glu Asp Tyr Tyr Gln Ile Leu  
20 25 30

Gly Val Pro Arg Asn Ala Ser Gln Lys Glu Ile Lys Lys Ala Tyr Tyr  
35 40 45

Gln Leu Ala Lys Lys Tyr His Pro Asp Thr Asn Lys Asp Asp Pro Lys  
50 55 60

Ala Lys Glu Lys Phe Ser Gln Leu Ala Glu Ala Tyr Glu Val Leu Ser  
 65 70 75 80  
 Asp Glu Val Lys Arg Lys Gln Tyr Asp Ala Tyr Gly Ser Ala Gly Phe  
 85 90 95  
 Asp Pro Gly Ala Ser Gly Ser Gln His Ser Tyr Trp Lys Gly Gly Pro  
 100 105 110  
 Thr Val Asp Pro Glu Glu Leu Phe Arg Lys Ile Phe Gly Glu Phe Ser  
 115 120 125  
 Ser Ser Ser Phe Gly Asp Phe Gln Thr Val Phe Asp Gln Pro Gln Glu  
 130 135 140  
 Tyr Phe Met Glu Leu Thr Phe Asn Gln Ala Ala Lys Gly Val Asn Lys  
 145 150 155 160  
 Glu Phe Thr Val Asn Ile Met Asp Thr Cys Glu Arg Cys Asn Gly Lys  
 165 170 175  
 Gly Asn Glu Pro Gly Thr Lys Val Gln His Cys His Tyr Cys Gly Gly  
 180 185 190  
 Ser Gly Met Glu Thr Ile Asn Thr Gly Pro Phe Val Met Arg Ser Thr  
 195 200 205  
 Cys Arg Arg Cys Gly Gly Arg Gly Ser Ile Ile Ile Ser Pro Cys Val  
 210 215 220  
 Val Cys Arg Gly Ala Gly Gln Ala Lys Gln Lys Lys Arg Val Met Ile  
 225 230 235 240  
 Pro Val Pro Ala Gly Val Glu Asp Gly Gln Thr Val Arg Met Pro Val  
 245 250 255  
 Gly Lys Arg Glu Ile Phe Ile Thr Phe Arg Val Gln Lys Ser Pro Val  
 260 265 270  
 Phe Arg Arg Asp Gly Ala Asp Ile His Ser Asp Leu Phe Ile Ser Ile  
 275 280 285  
 Ala Gln Ala Leu Leu Gly Gly Thr Ala Arg Ala Gln Gly Leu Tyr Glu  
 290 295 300  
 Thr Ile Asn Val Thr Ile Pro Pro Gly Thr Gln Thr Asp Gln Lys Ile  
 305 310 315 320  
 Arg Met Gly Gly Lys Gly Ile Pro Arg Ile Asn Ser Tyr Gly Tyr Gly  
 325 330 335  
 Asp His Tyr Ile His Ile Lys Ile Arg Val Pro Lys Arg Leu Thr Ser  
 340 345 350  
 Arg Gln Gln Ser Leu Ile Leu Ser Tyr Ala Glu Asp Glu Thr Asp Val  
 355 360 365

Glu Gly Thr Val Asn Gly Val Thr Leu Thr Ser Ser Gly Gly Ser Thr  
 370 375 380

Met Asp Ser Ser Ala Gly Ser Lys Ala Arg Arg Glu Ala Gly Glu Asp  
 385 390 395 400

Glu Glu Gly Phe Leu Ser Lys Leu Lys Lys Met Phe Thr Ser  
 405 410

<210> 11

<211> 387

<212> PRT

<213> Homo sapiens

<400> 11

Val Ser Leu Thr Gly Thr Lys His Asn Pro Phe Ile Cys Thr Ala Ser  
 1 5 10 15

Phe His Thr Ser Ala Pro Leu Ala Lys Glu Asp Tyr Tyr Gln Ile Leu  
 20 25 30

Gly Val Pro Arg Asn Ala Ser Gln Lys Glu Ile Lys Lys Ala Tyr Tyr  
 35 40 45

Gln Leu Ala Lys Lys Tyr His Pro Asp Thr Asn Lys Asp Asp Pro Lys  
 50 55 60

Ala Lys Glu Lys Phe Ser Gln Leu Ala Glu Ala Tyr Glu Val Leu Ser  
 65 70 75 80

Asp Glu Val Lys Arg Lys Gln Tyr Asp Ala Tyr Gly Ser Ala Gly Phe  
 85 90 95

Asp Pro Gly Ala Ser Gly Ser Gln His Ser Tyr Trp Lys Gly Gly Pro  
 100 105 110

Thr Val Asp Pro Glu Glu Leu Phe Arg Lys Ile Phe Gly Glu Phe Ser  
 115 120 125

Ser Ser Ser Phe Gly Asp Phe Gln Thr Val Phe Asp Gln Pro Gln Glu  
 130 135 140

Tyr Phe Met Glu Leu Thr Phe Asn Gln Ala Ala Lys Gly Val Asn Lys  
 145 150 155 160

Glu Phe Thr Val Asn Ile Met Asp Thr Cys Glu Arg Cys Asn Gly Lys  
 165 170 175

Gly Asn Glu Pro Gly Thr Lys Val Gln His Cys His Tyr Cys Gly Gly  
 180 185 190

Ser Gly Met Glu Thr Ile Asn Thr Gly Pro Phe Val Met Arg Ser Thr  
 195 200 205

Cys Arg Arg Cys Gly Gly Arg Gly Ser Ile Ile Ile Ser Pro Cys Val  
 210 215 220

Val Cys Arg Gly Ala Gly Gln Ala Lys Gln Lys Lys Arg Val Met Ile  
225 230 235 240

Pro Val Pro Ala Gly Val Glu Asp Gly Gln Thr Val Arg Met Pro Val  
245 250 255

Gly Lys Arg Glu Ile Phe Ile Thr Phe Arg Val Gln Lys Ser Pro Val  
260 265 270

Phe Arg Arg Asp Gly Ala Asp Ile His Ser Asp Leu Phe Ile Ser Ile  
275 280 285

Ala Gln Ala Leu Leu Gly Gly Thr Ala Arg Ala Gln Gly Leu Tyr Glu  
290 295 300

Thr Ile Asn Val Thr Ile Pro Pro Gly Thr Gln Thr Asp Gln Lys Ile  
305 310 315 320

Arg Met Gly Gly Lys Gly Ile Pro Arg Ile Asn Ser Tyr Gly Tyr Gly  
325 330 335

Asp His Tyr Ile His Ile Lys Ile Arg Val Pro Lys Arg Leu Thr Ser  
340 345 350

Arg Gln Gln Ser Leu Ile Leu Ser Tyr Ala Glu Asp Glu Thr Asp Val  
355 360 365

Glu Gly Thr Val Asn Gly Val Thr Leu Thr Ser Ser Gly Lys Arg Ser  
370 375 380

Thr Gly Asn  
385

<210> 12

<211> 480

<212> PRT

<213> Homo sapiens

<400> 12

Met Ala Ala Arg Cys Ser Thr Arg Trp Leu Leu Val Val Val Gly Thr  
1 5 10 15

Pro Arg Leu Pro Ala Ile Ser Gly Arg Gly Ala Arg Pro Pro Arg Glu  
20 25 30

Gly Val Val Gly Ala Trp Leu Ser Arg Lys Leu Ser Val Pro Ala Phe  
35 40 45

Ala Ser Ser Leu Thr Ser Cys Gly Pro Arg Ala Leu Leu Thr Leu Arg  
50 55 60

Pro Gly Val Ser Leu Thr Gly Thr Lys His Asn Pro Phe Ile Cys Thr  
65 70 75 80

Ala Ser Phe His Thr Ser Ala Pro Leu Ala Lys Glu Asp Tyr Tyr Gln  
85 90 95



Ile Leu Gly Val Pro Arg Asn Ala Ser Gln Lys Glu Ile Lys Lys Ala  
 100 105 110  
 Tyr Tyr Gln Leu Ala Lys Lys Tyr His Pro Asp Thr Asn Lys Asp Asp  
 115 120 125  
 Pro Lys Ala Lys Glu Lys Phe Ser Gln Leu Ala Glu Ala Tyr Glu Val  
 130 135 140  
 Leu Ser Asp Glu Val Lys Arg Lys Gln Tyr Asp Ala Tyr Gly Ser Ala  
 145 150 155 160  
 Gly Phe Asp Pro Gly Ala Ser Gly Ser Gln His Ser Tyr Trp Lys Gly  
 165 170 175  
 Gly Pro Thr Val Asp Pro Glu Glu Leu Phe Arg Lys Ile Phe Gly Glu  
 180 185 190  
 Phe Ser Ser Ser Ser Phe Gly Asp Phe Gln Thr Val Phe Asp Gln Pro  
 195 200 205  
 Gln Glu Tyr Phe Met Glu Leu Thr Phe Asn Gln Ala Ala Lys Gly Val  
 210 215 220  
 Asn Lys Glu Phe Thr Val Asn Ile Met Asp Thr Cys Glu Arg Cys Asn  
 225 230 235 240  
 Gly Lys Gly Asn Glu Pro Gly Thr Lys Val Gln His Cys His Tyr Cys  
 245 250 255  
 Gly Gly Ser Gly Met Glu Thr Ile Asn Thr Gly Pro Phe Val Met Arg  
 260 265 270  
 Ser Thr Cys Arg Arg Cys Gly Gly Arg Gly Ser Ile Ile Ile Ser Pro  
 275 280 285  
 Cys Val Val Cys Arg Gly Ala Gly Gln Ala Lys Gln Lys Lys Arg Val  
 290 295 300  
 Met Ile Pro Val Pro Ala Gly Val Glu Asp Gly Gln Thr Val Arg Met  
 305 310 315 320  
 Pro Val Gly Lys Arg Glu Ile Phe Ile Thr Phe Arg Val Gln Lys Ser  
 325 330 335  
 Pro Val Phe Arg Arg Asp Gly Ala Asp Ile His Ser Asp Leu Phe Ile  
 340 345 350  
 Ser Ile Ala Gln Ala Leu Leu Gly Gly Thr Ala Arg Ala Gln Gly Leu  
 355 360 365  
 Tyr Glu Thr Ile Asn Val Thr Ile Pro Pro Gly Thr Gln Thr Asp Gln  
 370 375 380  
 Lys Ile Arg Met Gly Gly Lys Gly Ile Pro Arg Ile Asn Ser Tyr Gly  
 385 390 395 400

Tyr Gly Asp His Tyr Ile His Ile Lys Ile Arg Val Pro Lys Arg Leu  
405 410 415

Thr Ser Arg Gln Gln Ser Leu Ile Leu Ser Tyr Ala Glu Asp Glu Thr  
420 425 430

Asp Val Glu Gly Thr Val Asn Gly Val Thr Leu Thr Ser Ser Gly Gly  
435 440 445

Ser Thr Met Asp Ser Ser Ala Gly Ser Lys Ala Arg Arg Glu Ala Gly  
450 455 460

Glu Asp Glu Glu Gly Phe Leu Ser Lys Leu Lys Lys Met Phe Thr Ser  
465 470 475 480

<210> 13

<211> 33

<212> PRT

<213> Homo sapiens

<400> 13

Gly Ser Thr Met Asp Ser Ser Ala Gly Ser Lys Ala Arg Arg Glu Ala  
1 5 10 15

Gly Glu Asp Glu Glu Gly Phe Leu Ser Lys Leu Lys Lys Met Phe Thr  
20 25 30

Ser

<210> 14

<211> 6

<212> PRT

<213> Homo sapiens

<400> 14

Lys Arg Ser Thr Gly Asn  
1 5

<210> 15

<211> 26

<212> PRT

<213> Artificial Sequence

**<220>**

<223> Description of Artificial Sequence: Synthetic peptide

<400> 15

Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly Arg Lys Lys Arg  
1 5 10 15

Arg Gln Arg Arg Arg Pro Pro Gln Gly Ser  
20 25

<210> 16  
 <211> 12  
 <212> PRT  
 <213> Unknown Organism

<220>  
 <223> Description of Unknown Organism: EGF derived  
 peptide

<400> 16  
 Cys Met His Ile Glu Ser Leu Asp Ser Tyr Thr Cys  
           1                  5                  10

<210> 17  
 <211> 12  
 <212> PRT  
 <213> Unknown Organism

<220>  
 <223> Description of Unknown Organism: EGF derived  
 peptide

<400> 17  
 Cys Met Tyr Ile Glu Ala Leu Asp Lys Tyr Ala Cys  
           1                  5                  10

<210> 18  
 <211> 29  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 internalizing peptide

<400> 18  
 Glu Ala Ala Leu Ala Glu Ala Leu Ala Glu Ala Leu Ala Glu Ala Leu  
           1                  5                  10                  15

Ala Glu Ala Leu Ala Glu Ala Leu Glu Ala Leu Ala Ala  
                           20                          25

<210> 19  
 <211> 8  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Illustrative  
 peptide

<400> 19  
 Gly Asn Ala Ala Ala Ala Arg Arg  
           1                  5

<210> 20  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 20  
 cgagacagat gtggagggga 20

<210> 21  
 <211> 18  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Primer

<400> 21  
 gaataattta aacacact 18

<210> 22  
 <211> 36  
 <212> PRT  
 <213> Homo sapiens

<400> 22  
 Ser Ser Gly Gly Ser Thr Met Asp Ser Ser Ala Gly Ser Lys Ala Arg  
 1 5 10 15

Arg Glu Ala Gly Glu Asp Glu Glu Gly Phe Leu Ser Lys Leu Lys Lys  
 20 25 30

Met Phe Thr Ser  
 35

<210> 23  
 <211> 9  
 <212> PRT  
 <213> Homo sapiens

<400> 23  
 Ser Ser Gly Lys Arg Ser Thr Gly Asn  
 1 5

<210> 24  
 <211> 33  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 24

Gly Ser Thr Met Asp Ser Ser Ala Gly Ser Lys Ala Arg Arg Glu Ala  
 1 5 10 15

Gly Glu Asp Glu Glu Gly Phe Leu Ser Lys Leu Lys Lys Met Phe Thr  
 20 25 30

Ser

&lt;210&gt; 25

&lt;211&gt; 33

&lt;212&gt; PRT

&lt;213&gt; Mus sp.

&lt;400&gt; 25

Gly Arg Thr Met Asp Ser Ser Ala Glu Ser Lys Asp Arg Arg Glu Ala  
 1 5 10 15

Gly Glu Asp Asn Glu Gly Phe Leu Ser Lys Leu Lys Lys Ile Phe Thr  
 20 25 30

Ser

&lt;210&gt; 26

&lt;211&gt; 6

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 26

Lys Arg Ser Thr Gly Asn  
 1 5

&lt;210&gt; 27

&lt;211&gt; 6

&lt;212&gt; PRT

&lt;213&gt; Mus sp.

&lt;400&gt; 27

Lys Arg Ser Thr Gly Asn  
 1 5